

SAVANNAH RIVER OPERATIONS OFFICE**Progress Report****memorandum**

Savannah River Operations Office (SR)

DATE:

REPLY TO

ATTN OF: SD (V. B. Wheeler/803-725-0379)

SUBJECT: SR End of Year Progress Report - Hanford Plutonium Finishing Plant (PFP) and Emergency Management Lessons Learned

TO: Acting Assistant Secretary for Environment, Safety and Health (EH-1), HQ
Director, Office of Nonproliferation and National Security (NN-1), HQ

The attached progress report is in response to your request for a year end status of our actions in response to the Hanford PFP explosion. Over the past few months a considerable amount of time and effort has gone into assessing our safety posture relative to chemical vulnerabilities throughout our facilities. Both our Management and Operating contractors: Westinghouse Savannah River Company and Wackenhut Services, Incorporated, as well as our co-operative partners: Savannah River Ecology Laboratory and Savannah River Institute, have assessed their programs. As a result, no additional vulnerabilities were reported; however, we have identified several opportunities to enhance our safety management systems and their implementation.

SR has also reviewed the technical competence of the DOE facility staff and have identified actions to enhance the degree of technical competence necessary to provide quality oversight of our contractors. Also, through our technical assessment program, we will continue providing oversight of the contractors activities which will include reviews of chemical safety vulnerabilities.

Please direct any questions you may have to me or Len Sjostrom at (803) 725-5562.

SD:VBW:lca

Greg Rudy
Acting Manager

VF-98-0032

2 Attachments:

- (1) Progress Report
- (2) Memo, Sjostrom to NN-1,
"Timely Notification," dated: 10/22/97

Response to Lessons Learned from Chemical Explosion at Hanford Plutonium Finishing Plant

December 30, 1997

**Compiled by: SR Safety Division
Point of Contact: Vickie B. Wheeler**

SAVANNAH RIVER SITE
OUTLINE OF RESPONSE TO LESSONS LEARNED FROM
CHEMICAL EXPLOSION AT HANFORD PLUTONIUM FINISHING PLANT

I. DIRECTIVE #1: Plutonium Reclamation Plant Lessons Learned

- Assessment of Use and Storage of Chemicals with Hazard Potential and SR Approval Process
- Reassessment of Site Chemical Vulnerability Study and Assessment of Hazards in Inactive Facilities
- Assessment of Technical Competence of Personnel
- Assessment of Lessons Learned and Occurrence Reporting Programs

II. DIRECTIVE #2: EMERGENCY RESPONSE ISSUES

- Emergency Management Decision Making
- Protective Equipment and Staffing
- Protective Treatment of Personnel
- Hazards Information

III. DIRECTIVE #3: TIMELY NOTIFICATION ISSUES

- Review Emergency Action Level (EAL) Criteria
- Review Training and Conduct Refresher Training
- Solicit Comments from Outside Agencies

IV. DIRECTIVE #4: WASTE STORAGE TANK AND ANCILLARY PIPING ISSUES

- All Storage Tanks Identified and Fully Characterized
- Sound Technical Understanding of All Possible Chemical Reactions in Tanks and Ancillary Equipment
- Immediate Written Notification of Tanks Identified as Posing (Significant) Potential Safety Hazards

I. DIRECTIVE #1: PFP Lessons Learned, Dated: August 4, 1997

In response to this directive, Savannah River Operations Office tasked both M&O contractors (Westinghouse Savannah River Company and Wackenhut Services, Inc.), the Savannah River Ecology Laboratory and the Savannah River Institute (formally the Savannah River Forest Service) with reviewing the status of their existing programs for managing chemicals. The following status details enhancements to existing site initiatives and programs.

- **ASSESSMENT OF USE AND STORAGE OF CHEMICALS WITH HAZARD POTENTIAL AND SR APPROVAL PROCESS**

WESTINGHOUSE SAVANNAH RIVER COMPANY (WSRC)

In 1995, WSRC instituted a Chemical Commodity Management Center (CCMC) to address chemical issues at Savannah River Site (SRS). This concept provides an institutionalized system for the use, storage, and disposal of hazardous chemicals (see Figure 1). This includes development of site policies and procedures covering the acquisition, handling, storage, reutilization, and disposal of site chemicals and chemical products. Under this program utilizing CCMC's technical expertise, guidance is given on a daily basis covering chemical substitutions to reduce toxicity and waste, proper chemical compatibility, storage handling, and contracting issues. Four areas which are pertinent to the vulnerability assessment issues covered by this program are:

1. **Acquisition of chemicals** - All new chemical products are reviewed for Industrial Health (IH) and environmental concerns to reduce hazardous chemicals and chemical products at SRS.
2. **Inventory Management** - This activity includes ownership of the site inventory database, namely the Chemical Information and Inventory System (CIIS), the site annual chemical inventory, and Material Safety Data Sheets (MSDS) responsibility for SRS. The inventory is updated annually with monthly input from individual departments through their chemical coordinators.
3. **Excess Chemical Management** - The management of excess chemicals and chemical products includes the following activities:
 - Collection of excess chemical data which is utilized to market products on and off site
 - Collection of excess material to a central location for redistribution and repackaging for shipment on and off site
 - Off site donations to the public sector through federal, state, and local agencies
 - Review chemical products in the field to determine if the chemicals are viable for reutilization. Unviable chemicals are declared waste and handled through the Solid Waste program.
 - Chemical sales program to the public sector. All donations and sales are approved by SR Property Management Officer.

4. **Chemical Coordinator Program** - The Chemical Coordinator program was developed and is administered by the contractor to fulfill Hazard Communication requirements. Chemical Coordinators are tasked to perform the annual chemical inventory by building location and implement the Hazard Communication Program labeling and training requirements. They work with other facility representatives to meet storage and handling requirements.

Although the WSRC chemical management program has an adequate and institutionalized program, there are areas that require improvement actions:

1. **Inventory Management** - The site chemical inventory is not always updated monthly as specified by the contractor. This action is being addressed by the contractor.
2. **Technical Competence** - Chemical Coordinator positions are generally collateral assignments. Assigned personnel have varying backgrounds. Currently there is no formal training program for them. However, the contractor developed a training program scheduled for implementation during FY98.
3. **Excess Chemicals** - The contractor program is considered adequate and in compliance with all applicable legal and regulatory requirements. The process for timely disposal of nonviable excess chemicals has proven to be a difficult task. A management team comprised of contractors will seek opportunities to streamline the process and improve timeliness while reducing cost.

As a pathforward WSRC conducted an in-house independent assessment of the site chemical management process. The WSRC Facility Evaluation Board (FEB) identified both programmatic and facility specific areas for improvement. SR will continue conducting facility assessments in accordance with our formal technical assessment program.

WACKENHUT SERVICES INC. SAVANNAH RIVER SITE (WSI-SRS)

WSI-SRS participates in the annual site inventory coordinated by WSRC. WSI-SRS controls small quantities of explosives that are required to maintain the security mission here at the site. These items are closely monitored and handled in accordance with the DOE Explosives Safety Manual and WSI-SRS procedures. WSI coordinates the disposal of surplus chemicals and chemical wastes with WSRC waste management programs that are in accordance with applicable federal and state regulations.

No program enhancements were identified by contractor. SR plans to conduct a review as a part of our 1998 technical assessment program.

SAVANNAH RIVER ECOLOGY LABORTORY (SREL)

Under a Cooperative Agreement, the University of Georgia Research Foundation, Inc., provides an independent evaluation of the ecological effects of Savannah River Site (SRS) operations through a program of ecological research, education and outreach. SREL maintains an institutionalized program for managing chemicals. Their program includes ongoing assessments and communication regarding the hazards associated with chemicals and radioactive waste.

Semi-annual chemical inventories are performed and maintained by SREL personnel. SREL Safety personnel conduct quarterly assessments of the laboratories and storage areas. A review of the user's knowledge of chemical hazards is also conducted during these inspections.

No program enhancements were identified by SREL. SR Safety Division plans to conduct a review as a part of our 1998 technical assessment program.

SAVANNAH RIVER INSTITUTE (SRI)

SRI is responsible for managing the Savannah River Forest Station and the Natural Resources Science, Math and Engineering Education Program. SRI has an institutionalized program for managing the procurement of chemicals. SRI also participates in the annual site inventory that is coordinated by WSRC. SRI Environment, Safety and Health organization conducts quarterly facility inspections where each building and storage area within SRI facility is inspected for both safety and environmental hazards. SRI has established a Pesticide Management Program with a pesticide coordinator who is responsible for managing the program. The coordinator conducts monthly inventories of the pesticide storage building.

No program enhancements were identified by SRI. SR Safety Division plans to conduct a review as a part of our 1998 technical assessment program.

• SR APPROVAL PROCESS

WESTINGHOUSE SAVANNAH RIVER COMPANY

The Savannah River Operations Office (SR) has adopted DOE-EM-STD-5502-94, "Hazard Baseline Documentation" for application at the Savannah River Site (SRS). DOE-EM-STD-5502-94 has applicability to Westinghouse Savannah River Company (WSRC) through clause H.12 of the contract in the form of the Standards/Requirements Identification Document (S/RID). DOE-EM-STD-5502-94 applies to all facilities and defines the type and level of hazard analysis required. The standard groups all facilities into one of four categories: (1) nuclear, (2) radiological, (3) non-nuclear, and (4) other industrial. The type of analysis required for each and the level of approval required are described below:

Nuclear facilities (as defined by DOE-STD-1027-92) are required to have Safety Analysis Reports (SAR) by DOE Order 5480.23. The Order (also included in the S/RID) requires the hazard analysis in the SAR to address the "inventory enveloping all radioactive and nonradioactive toxic or dangerous materials that are stored, utilized, or may be formed within a nuclear facility." SAR must be approved by DOE.

Radiological facilities (as defined by DOE-EM-STD-5502-94) are those with an inventory of radiological materials below the levels defined in DOE-STD-1027-92, but above the reportable quantity (RQ) value listed in 40 CFR 302, Table 302.4, Appendix B. Radiological facilities "shall develop an auditable (defendable) safety analysis (similar to a SAR but with much reduced content and requirements)." An auditable safety analysis (ASA) provides a systematic identification of hazards and describes and analyzes the adequacy of measures taken to eliminate,

control, or mitigate the hazards. ASA are approved by WSRC and, as the name implies, subject to review and audit by DOE.

Non-nuclear facilities are those with an amount of radioactive material less than the RQ values listed in 40 CFR 302, Table 302.4, Appendix B, but with an amount of hazardous material exceeding the RQ values. An ASA is acceptable for non-nuclear facilities. ASAs are approved by WSRC.

Industrial facilities are those containing amounts of hazardous material below the RQ values listed in 40 CFR 302, Table 302.4, Appendix B. Industrial facilities are simply required to comply with OSHA regulations and no specific hazard analysis is required.

If any facility contains an amount of hazardous material exceeding the thresholds specified in 29 CFR 1910.119, a Health and Safety Plan (HASP) is required. This requirement is independent of the hazard category. HASPs are to be integrated with SAR or ASA, as applicable. Hazard Category 1 and 2 nuclear facilities, “high” and “moderate” hazard radiological or non-nuclear facilities must have their HASP approved by DOE. Hazard Category 3 nuclear facilities and “low” hazard radiological and non-nuclear facility HASP are approved by contractor management..

WSRC has translated the requirements of DOE-EM-STD-5502-94 to Manual 11Q, “Facility Safety Document Manual”, Procedure 1.01, “Generation, Review and Approval of Safety Documents” (see Figures 2 and 3). In addition to the standard, the WSRC procedure addresses all of the types of hazards analyses required by DOE Orders and federal regulations (SAR, HAD, EPHA, PHR, etc.).

Implementation

As part of the process to implement DOE Orders 5480.23 (SAR) and 5480.22 (TSR), WSRC performed a hazard categorization of all structures on the SRS (over 2000 separately identifiable physical structures - buildings, tanks, stacks, wells, etc.) using DOE-STD-1027-92. Radiological surveys, material safety data sheets (MSDS), nuclear material accountability reports and other sources of information were used in conjunction with physical walkdowns to categorize each structure. The list of “nuclear and radiological facilities” is formally approved by SR and is included in Functional Area 00 of the S/RID. The following summarizes the hazard category breakdown:

Nuclear Facilities:

Hazard Category 1	=	0
Hazard Category 2	=	115 structures (approximately 20 “facilities”)
Hazard Category 3	=	64 structures
Radiological Facilities:	=	43

Where structures are common or support a major nuclear facility, they have been grouped together for convenience of analysis. For example, the safety analysis for the Tank Farms includes all of the tanks in both F-Area and H-Area (over 40 tanks in all). All nuclear facilities at SRS have SARs (or equivalent, where allowed by DOE Order 5480.23) approved by DOE. These SARs included potential accident scenarios involving hazardous material and have been extensively reviewed by SR.

All other hazard category facilities at SRS have ASAs approved by WSRC. In effect, the ASA is the basis for the lower hazard categorization (i.e., below nuclear). The rigor and detail included in the ASA for each radiological and non-nuclear facility varies widely. At SRS the ASA may consist of a single document required by other DOE Orders or federal regulations (e.g., HAD) or a compilation of such documents (PHR, EPHA, etc.).

As the Hazard Identification program expands to include non-nuclear and industrial facilities SR will be involved with determining authorization requirements. Areas that require improvement actions:

1. Inclusion of all facilities in the contractors Hazard Identification program.
2. Development of a Management of Change process for facilities that are not covered under the USQ Process.

- **ASSESSMENT OF SITE CHEMICAL VULNERABILITY STUDY OF INACTIVE FACILITIES**

WESTINGHOUSE SAVANNAH RIVER COMPANY (WSRC)

SR Safety Division completed a review of known vulnerabilities identified in the 1994 Chemical Vulnerability Study. The contractor has to date completed 94 of the 97 actions detailed in the September 1994 Management Response Plan. The remaining actions that are pending implementation are:

- Updates to all nuclear Safety Analysis Reports (SARs)
- Development of SARs (or an equivalent) for non-nuclear industrial facilities
- Development of a Sitewide real time chemical inventory system

Each of these vulnerabilities are being addressed in various sections of this report. WSRC has implemented program enhancements and site initiatives to address these vulnerabilities. These vulnerabilities have been incorporated into the Technical Assessment Program that will facilitate an annual review of open vulnerabilities.

WSRC Facilities Decommissioning Division (FDD) coordinated a site-wide review of inactive nuclear and non-nuclear facilities to assure that safety, chemical, and radiological hazards have been identified and are being managed safely. This review included using a checklist type review as a screening tool designed to identify hazards that may exist in the inactive facilities as well as identifying the institutional process/systems that are in place to ensure that identified hazards are being effectively managed. Approximately 130 facilities were reviewed and the results will be analyzed to establish a systematic risk rating and prioritization ranking of inactive and excess facilities.

WSRC has a program in place to ensure facilities and operations are evaluated for new vulnerabilities on a continuing basis. The contractor's integrated Safety Management System with emphasis on self-assessment and rigorous oversight as well as the periodic reviews of facility

safety documentation and associated process hazards analyses required for each facility are the basis of the contractors sitewide program.

The contractor will be implementing the following programmatic improvements:

1. Revise program manual to require a biennial review of authorization basis and process hazards methodologies for adequacy. (9/30/98)
2. Develop a systematic risk rating system and prioritization ranking algorithm for inactive facilities.
3. Implementing a corrective action plan for findings that resulted from the review of the Inactive facilities.

OTHER SITE CONTRACTOR'S AND PARTNERS

In summary WSI, SREL and SRI reported no facilities that have been shut down, are in standby, are currently being deactivated, or have otherwise changed their conventional mode of operation during 1997.

No program enhancements were identified by these entities. SR Safety Division plans to conduct a review as a part of our 1998 technical assessment program.

• ASSESSMENT OF TECHNICAL COMPETENCE OF PERSONNEL

SAVANNAH RIVER (SR)

SR line organizations conducted a review of their facility assigned personnel. SR has Facility Representatives and Facility Technical Specialists that have completed either the Facility Representative (FR) or the 93-3 Technical Qualification Programs respectively. In addition to completing either the FR and 93-3 programs, FR's and Facility Technical Specialists have received additional facility specific training/knowledge that addresses the chemical hazards associated with their assigned duties. Overall, the competence of the SR facility assigned personnel was found to be adequate.

Two line organizations identified the need for additional training for select technical professionals. Additional training will be coordinated between the line organizations and SR Training Office.

WESTINGHOUSE SAVANNAH RIVER COMPANY (WSRC)

WSRC has an established commitment to, and record of, utilizing performance-based training and competency-based staffing to ensure that the correct technical competencies are defined for critical positions and that incumbents and position candidates possess them. The issues raised by the Hanford chemical explosion, lessons learned from recent local occurrences, and findings from the contractor's internal self-assessments have identified specific areas that require improvements:

1. The need for an improved Chemical Coordinator training program. Implementation by June 1998.
2. The general knowledge level and performance of Radiological Control First Line Supervisors needs improvement. An upgraded training and qualification program is in place to support achieving the desired level of competence. This requalification program will be complete, including completion of comprehensive written and oral examinations, by September 30, 1998.
3. Required training and/or competencies for technical personnel performing hazard identification, hazard analysis, and controls positions are not consistently identified or documented across the site. Development of consistent guidelines by January 8, 1998, with implementation by March 31, 1998.

WACKENHUT SERVICES INC. (WSI) AND OTHER PARTNERS

In summary WSI, SREL and SRI reported that the technical competence of their organizations is adequate. Each entity identified specific Environment, Safety and Health personnel on staff that are responsible for the full range of hazards to which employees are exposed, as well as to identify training needs and implement new training programs as appropriate. Employees receive annual training that includes chemical-specific training related to assigned duties.

No program enhancements were identified by these entities. SR Safety Division plans to conduct a review as a part of our 1998 technical assessment program.

• ASSESSMENT OF LESSONS LEARNED AND OCCURRENCE REPORTING PROGRAMS

WESTINGHOUSE SAVANNAH RIVER COMPANY (WSRC)

The Site Lessons Learned Program which is managed by WSRC, implements a systematic review of the operating experiences at Savannah River Site facilities, similar DOE complex facilities, and commercial nuclear industry facilities for the purpose of applying the lessons learned from those experiences. All contractors and partners have access to this program.

Information is screened at the Site Lessons Learned Program Level and potentially applicable items are transmitted to site Divisions for information and/or action as appropriate. Identified corrective actions are reported to and tracked by the Site Coordinator for Lessons Learned. The Site Lessons

Learned Program incorporates the following five key attributes into its operations: 1) a dedicated Site Lessons Learned Coordinator, 2) a dedicated site level staff of three engineers/scientists,

3) eleven facility assigned coordinators representing eighteen contractor divisions who report to the Site Lessons Learned Coordinator on a matrixed basis, 4) corrective action tracking, and 5) senior management involvement.

The SRS Lessons Learned Program is a mature program which continues to improve as a result of both SR and contractor internal assessments. Formal Assessments were conducted by SR during FY97 and are scheduled to be performed the second quarter of FY98. In addition, these programs are assessed continuously by the contractor's Facility Evaluation Board (FEB) that evaluate both facility implementation and programmatic effectiveness.

The program has consistently received ratings ranging from effective to outstanding with only minor deficiencies noted: The primary areas identified for improvement were:

1. Corrective action closure validation process
2. Enhance transmittal of information to appropriate personnel (includes transmittals to other contractors and SR partners)
3. Improve initiation of prompt action to prevent recurrence

Interim actions for all items have been completed and Site level documents will be revised to institutionalize these actions by June 30, 1998.

The site uses the Occurrence Reporting Processing System (ORPS), referred to as Site Item Reportability and Issue Management (SIRIM) at SRS, to accurately document and provide notification of events to site management and DOE customers. An assessment of the Occurrence Reporting System conducted in July 1997, found no major deficiencies. A subsequent review of the program following receipt of the Hanford explosion accident report revealed the need to clarify procedure instructions for determining the safety significance of occurrences. Procedures have been revised to include additional instructions.

OTHER SITE CONTRACTORS AND PARTNERS

Both WSI and SREL organizations receive either the SRS Lessons Learned Bulletins or Digest; SRI is not included in the program.

SR will conduct an assessment as a part of our 1998 technical assessment program.

II. DIRECTIVE #2: Emergency Response Issues

Ref: Pena Memorandum of August 27, 1997, to Heads of Field Elements, "Lessons Learned from the Emergency Response to the May 14, 1997, Explosion at Hanford's Plutonium Reclamation Facility"

The following describes the status of action items as stated in the above-referenced memorandum:

• EMERGENCY MANAGEMENT DECISION MAKING

1. Train key emergency management personnel on conservative decision making

(due 10/27/97).

Existing training lesson plans have been reviewed and determined to require improvement in providing an emphasis on making conservative judgments about facility conditions and personnel exposure in the absence of confirmed data. However, a review of the drill and exercise program determined that appropriate emphasis is placed on making conservative decisions during drill and exercise performance. For example, personnel practice using default source terms when real source terms cannot be determined and taking conservative protective actions when the situation is not well-defined.

A read-and-sign training package was delivered to key emergency management personnel on 10/20/97, which emphasized issues identified during the Hanford event and the importance of conservative emergency management decisions. In addition, a DOE-HQ developed course, 'Effective Emergency Management Decision Making with Incomplete or Unconfirmed Information,' was delivered to key emergency management personnel on 10/23/97. Beginning 1/98, the lessons learned module of required annual training will include issues identified during the Hanford event.

2. Conduct realistic exercises to include and confirm decision making capability (due 3/31/98).

Selected facility drills and the 2/98 annual emergency response exercise will include specific conservative decision making objectives to validate this capability.

- **PROTECTIVE EQUIPMENT AND STAFFING**

1. Confirm availability and qualification of critical personal protective equipment (due 10/12/97); periodically verify readiness.

Availability of equipment has been reviewed and determined to be adequate. Equipment is inventoried, checked, and calibrated on a regular basis by procedure. Equipment readiness and availability are regularly verified in drills and approximately 25 actual spill responses annually.

2. Sufficient numbers of qualified personnel must be available at all times for response and post accident activities involving chemical or radiological hazards (due 3/31/98); periodically verify readiness.

The Savannah River Site Fire Department Hazardous Materials Response Team provides 24-hour response coverage for spills and is supported by on-call Industrial Hygienists (IH) and RadCon Field Monitoring Teams. For facility incidents, support is also provided by facility IH personnel and RadCon technicians on shift. Personnel readiness and availability are regularly practiced in drills and verified in approximately 25 actual spill responses annually.

- **PROTECTIVE TREATMENT OF PERSONNEL**

1. Review policy/procedures with local medical authorities to ensure provisions for timely medical attention to injured/exposed personnel and continued patient monitoring are included (due 11/25/97).

The Savannah River Site (SRS) currently has Memoranda of Understanding (MOUs) with two local hospitals for care of radiologically contaminated, injured personnel. Policies and procedures have been reviewed with these medical authorities and determined to be adequate for radiological events. Current procedures direct RadCon technicians to accompany contaminated/injured patients in the ambulance and provide support through decontamination activities at the hospital. Discussion regarding the ability of the hospitals to process chemically contaminated patients identified some opportunity for improvement. SRS has agreed to provide guidance materials on chemical exposure response, and tours will be conducted to familiarize local contacts with SRS facilities and processes. SRS medical policies and procedures adequately cover provisions for the treatment of injured/exposed site personnel.

2. Conduct realistic exercises to confirm procedures are implemented for the notification and protection of workers in a variety of remote locations (due 3/31/98).

Protective action procedures have been demonstrated in over 250 facility drills and a sitewide sheltering drill in FY 1997. Facility and remote workers participate in these drills which contain specific objectives for notification and implementation of protective actions.

3. Ensure security, medical, and other emergency responders are trained to recognize the health impacts of exposure to chemicals and for post-traumatic stress (due 3/31/98).

Hazardous materials training is a qualification requirement for site Emergency Medical Technicians (EMTs) and emergency responders. Training consists of an initial 40-hour course and 8-hour annual refresher. All security personnel are trained to the Awareness Level; in addition, their Law Enforcement and Special Response Teams are trained to the Operations Level. This training is regularly practiced in drills involving contaminated injured persons and in responding to over 200 actual ambulance calls annually. Critical incident stress training is also provided annually. SRS procedures require debriefing of all involved personnel following any major incident. SRS also has an onsite psychologist who is trained in the recognition of post traumatic stress symptoms. The Security Contractor also has a local hospital on retainer to provide counseling as needed after major/traumatic incidents.

• HAZARDS INFORMATION

1. Confirm procedures are in place to provide local medical facilities with available information on chemical and radiological hazards, as well as timely qualitative and quantitative exposure information for individuals (due 11/25/97).

Memoranda of Understanding (MOUs) are in place with two local hospitals for the treatment of radiologically contaminated, injured patients. SRS has sponsored training for these hospitals through the Radiation Assistance Center/Training Site regarding radiological hazards and provisions for handling and caring for radiation accident victims. In addition, SRS procedures require a RadCon technician to accompany the patient in the

ambulance to provide information and assistance to the hospital. Discussion of the ability to process chemically contaminated patients identified some opportunity for improvement. SRS has agreed to provide guidance materials on chemical exposure response, and tours will be conducted to familiarize local contacts with SRS facilities and processes.

2. Conduct realistic exercises to confirm provisions are in place for providing local medical facilities with adequate information for a variety of potential accidents to effectively diagnose and treat injured, exposed or potentially exposed workers (due 3/31/98).

SRS conducts a major contaminated injured patient drill annually, which includes transports to local hospitals and treatment there. The drill program for FY98 will be expanded to two drills -- one for chemical exposure and one for radiological exposure.

III. DIRECTIVE #3: TIMELY NOTIFICATION ISSUES

All issues have been addressed. Refer to 10/21 memorandum to NN-1 for more details (see Attachment 2).

IV. DIRECTIVE #4: WASTE STORAGE TANK AND ANCILLARY PIPING ISSUES

WESTINGHOUSE SAVANNAH RIVER COMPANY

WSRC has implemented the Integrated Safety Management Process which systematically identifies hazards, assesses the risk associated with those hazards and establishes appropriate controls for those hazards. Through internal assessments WSRC determined that their overall program is effective in identifying and providing controls to protect against hazards associated with chemical reactions that may occur in waste storage tanks.

The primary guidance for performance of hazards identification and evaluation is the "Facility Safety Manual," 11Q. The 11Q Manual states:

"This Manual describes safety document requirements for facilities in FHCs [Facility Hazard Categorizations]. As shown in Figure 2, three of these categories are Nuclear Facilities (HC-1, HC-2, HC-3), while the other categories are Non-nuclear Facilities (Radiological, High Hazard Chemical, Low Hazard Chemical), and Other Industrial Facilities. The requirements of this Manual apply immediately to all Nuclear Facilities as listed in the S/RID. For Non-nuclear Facilities and Other Industrial Facilities, this Manual applies when a facility commits to prepare safety documents in the S/RID. . . .

This Manual addresses safety analysis and safety documentation requirements and provides an effective system for implementing those requirements. Safety analysis is divided into hazard identification, hazard analysis, and accident analysis. From these

analyses, safety documents are prepared that become part of the safety basis. Once approved, control of changes is established for the safety basis. From Figure 3 there are five phases: hazard identification, hazard analysis, accident analysis, safety documents and safety basis, and safety basis control. The requirements for these phases are contained in this Manual. This system results in the preparation, review, approval, and maintenance of the set of safety documents included in a facility's safety basis."

Hazards analyses for SRS facilities are developed per WSRC-IM-97-9, "Hazards Analysis Methodology Manual," which requires identification of chemical hazards and provides guidelines for chemical mixing studies to support the overall hazard analysis.

Once specific chemical hazards are identified by this process they are analyzed per the "Toxic Chemical Hazards Classification and Risk Acceptance Guidelines for Use in DOE Facilities" (WSRC-MS-92-206).

Hazards analysis is also required for new projects developed per the E11 Manual which directs personnel managing projects to the E7 Manual, "Conduct of Engineering and Technical Support," Procedure 2.13, "Task Requirements and Criteria." Procedure 2.13 requires hazard analysis be performed. Additionally, hazard analysis is required by E7 Procedure 2.05, "Plant Modification Traveler."

Additionally, WSRC has also developed the Management of Change (MOC) process for those activities where the primary safety basis is provided in the form of a Health and Safety Plan (HASP). The MOC process is used to ensure the safety envelope is maintained throughout the life of a project/activity. This process is recommended in DOE-EM-STD-5502-94, "Hazard Baseline Documentation," and is outlined in DOE-STD-1120-98, Integration of Safety and Health into Facility Disposition Activities." This process has been adopted for Environmental Restoration Division and Facility Decommissioning Division. Currently training for ER and FDD on MOC is under development for early CY98 implementation.

WSRC has proposed a three phase plan for characterizing the hazard analysis program for Savannah River Site (SRS) chemical and radioactive waste storage tanks and ancillary equipment. Phase I will characterize the processes used to establish the hazard baseline documentation of SRS facilities, document the status of each facility's hazard baseline documentation, implement previously identified programmatic improvements. Phase II will involve walkdowns of selected SRS facilities to validate the adequacy of their hazard baseline documentation. Phase III will upgrade the hazard baseline documentation for those facilities where Phase I or Phase II activities identify the need.

The first phase will document the basis for a facility's hazard baseline documentation, the facility processes, applicable hazard analysis, safety controls and management of change process for the nuclear, radiological, non-nuclear and industrial facilities at SRS. Phase I will also address the development and implementation of a site wide Management of Change (MOC) process for those facilities not covered by the Unreviewed Safety

Question (USQ) process (i.e., radiological, non-nuclear and industrial facilities). Additionally, Phase I will develop and implement a standardized process for transitioning a facility's hazard baseline documentation as the facility transitions from an active status to an inactive status.

The facilities review will be broken down into four groups, nuclear, radiological, non-nuclear and industrial. This will be based on the baseline grouping criteria established in

DOE-EM-STD-550 2-94, Hazard Baseline Documentation. Each facility baseline grouping will be further subdivided by facility status. These subdivisions will be Active, Inactive and the inactive portion(s) of an active facility. Table 4 details the specific information to be documented for each facility. Because there are over 5300 uniquely identified buildings at SRS (including rain shelters, sampling wells, concrete pads, etc.) a screening process will be used to identify the specific buildings to be reviewed in Phase I. Of these, it is our expectation that fewer than 300 buildings will be addressed during this phase. The proposed screening criteria will be as follows:

- Radioactive material in excess of 40 CFR 302.4, Appendix B thresholds, or
- Materials contained within the facility could presents a risk of chemical explosion, or
- The facility presents a risk of offsite impacts.

The 40 CFR 302.4, Appendix B thresholds are the minimum thresholds for a radiological facility as established by DOE-EM-STD-5502-94. While DOE-EM-STD-5502-94 provides thresholds quantities for chemicals, those thresholds are based on EPA reportability requirements and do not preclude risk to workers due to hazards associated with chemical mixing and the subsequent potential for chemical explosions. Therefore, criteria based on risk of chemical explosion and offsite impacts will be used in lieu of threshold quantities.

Phase I will also finalize the development and implement a MOC process for those facilities not covered by the USQ process. Currently, a MOC process has been piloted in Environmental Restoration Division (ERD) and Facility Decommissioning Division (FDD) where training has been performed for FDD and is under development for ERD. This MOC process satisfies the requirements of DRAFT DOE-STD-1120-98, Integrating Health and Safety into Facility Dispositioning. Additionally, Phase I will develop and implement a standardized transition process for a facility's hazard baseline documentation as the facility transitions from an active status to an inactive status.

Phase I will benefit from the SRS Authorization Basis Documentation process for nuclear facilities and the recently conducted inactive facility review. Both internal and external reviewers recognize that the Authorization Basis Documentation process for active nuclear facilities at SRS is a well established, robust program. The schedule for upgrading the active nuclear facility Authorization Basis Documentation is maintained in the "Safety Document Integrated Implementation Plan and Schedule". The recently concluded review of all inactive nuclear and non-nuclear facilities (130 facilities) provides assurance that chemical and other hazards had been identified and are being

safely managed. This review confirmed the presence of controls for many facilities. For those facilities where controls were not deemed adequate corrective actions are in progress. Additionally, using a selection of facilities from the Inactive Facilities List, WSRC will conduct a validation of the information reported in the recently completed Inactive Facility Review as to the presence or absence of chemical in these facilities. This validation will be completed by March 31, 1998.

This plan does not include specific actions to assess the SRS criticality safety program. This well-established program ensures DOE Order compliance and incorporates best management practices to further assure criticality safety at SRS. One of the keys to the programs success is a rigorous program of self assessments and internal oversight. The nuclear criticality safety program includes several activities which provide frequent review of facilities. The Nuclear Criticality Safety Review Committee (NCSRC), which reports to the Site Chief Engineer, is responsible for fostering criticality safety across the site. The NCSRC oversees the activities of the Facility Criticality Assessment Committees and investigates areas of criticality safety concerns deemed significant by the committees.

The facility criticality assessment committees assist in self-assessment and perform in-process reviews of operations per WSRC 12Q, Assessment Manual. The purpose of these self-assessments are to: (1) foster continuous improvement in the performance of WSRC activities and development of WSRC products and services, and (2) demonstrate ongoing compliance, primarily through performance-based verification and self evaluation techniques.

In addition to the two committees above, the Operations Evaluation Department provides independent reviews through the Facility Evaluation Board (FEB) that periodically carry out performance-based assessments of WSRC operational facilities and site-level programs, which includes nuclear criticality safety. The independent assessment program is part of the WSRC assessment program described in MP 1.22, WSRC Assessment Program. The assessments sample all applicable functional areas in WSRC-SCD-4, Assessment Performance Objectives and Criteria, to assess level of performance, evaluate the adequacy of the ongoing self-assessment process, and assure adherence to applicable DOE directives and regulatory requirements.

Finally, Phase III will upgrade the hazard baseline documentation for those facilities where deficiencies were noted. Additionally, Phase III will perform confirmatory characterizations of systems containing hazardous materials. Because this is an ongoing activity in active facilities and confirmatory actions are already underway for inactive facilities, this portion of Phase III will deal with the inactive portions of active facilities.

SR is currently reviewing the proposed plan to ensure the DOE objectives will be fully accomplished.

WACKENHUT SERVICES INC. (WSI) AND OTHER PARTNERS

In summary WSI, SREL and SRI do not operate or control any waste storage tanks, ancillary piping, or equipment. No program enhancements were identified by these entities.

**FIGURE 1: CHEMICAL LIFE CYCLE
AT THE SAVANNAH RIVER SITE**

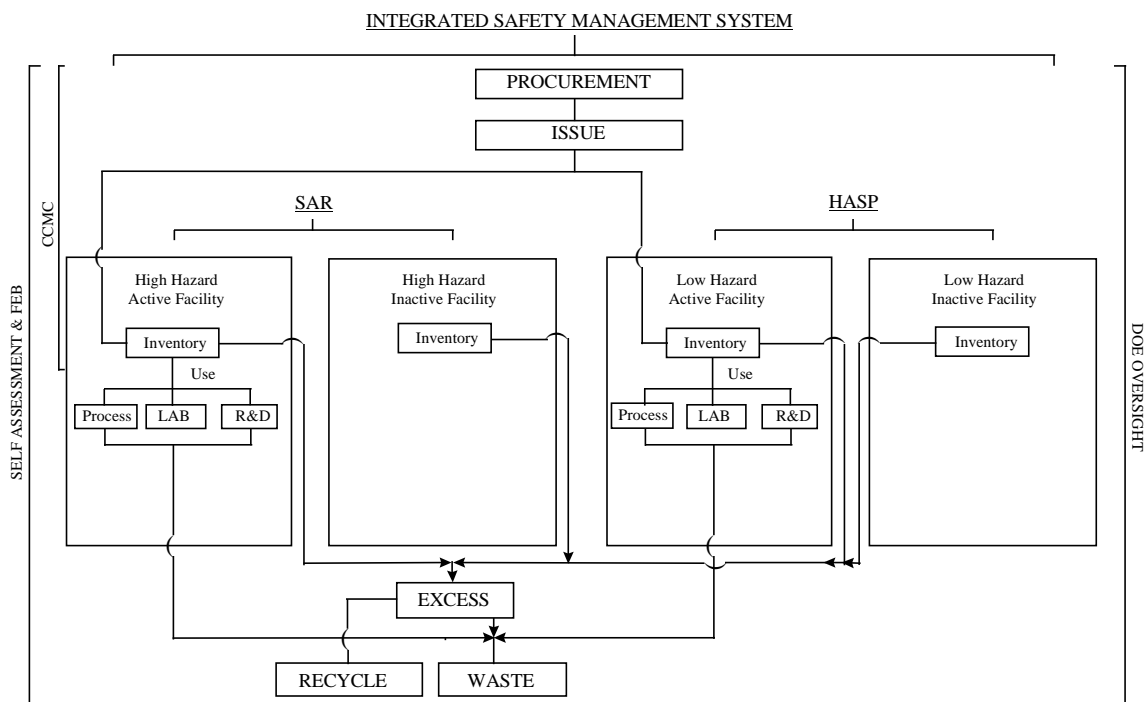


FIGURE 2: TYPES OF ANALYSIS

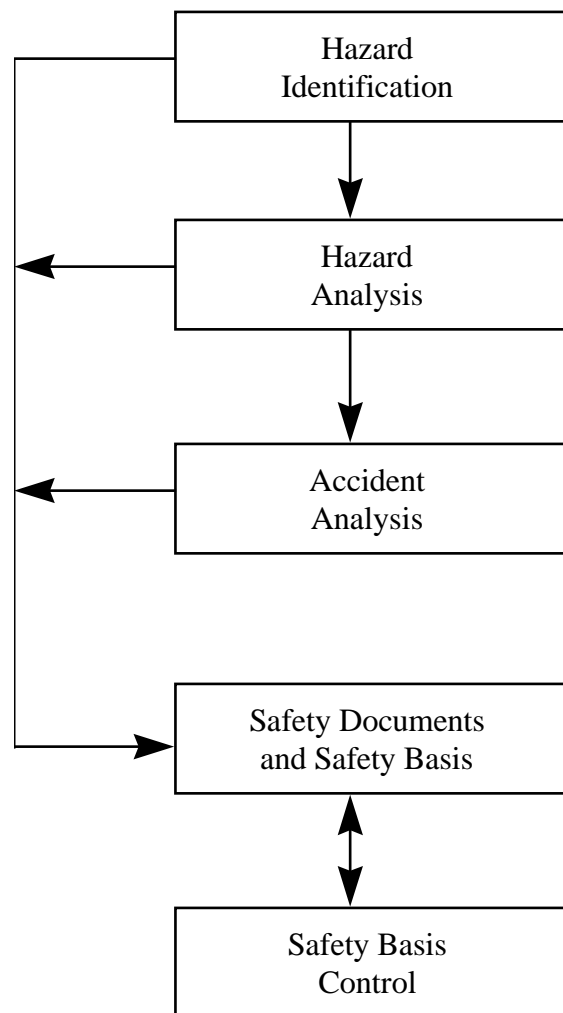
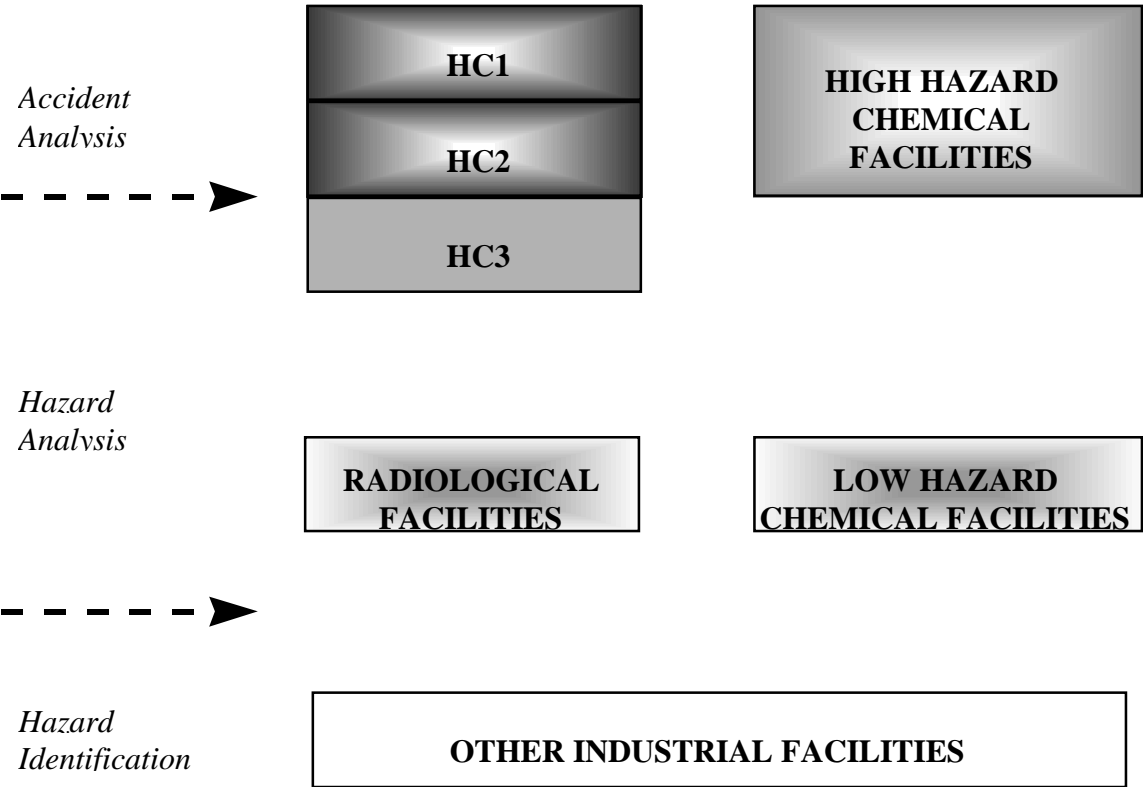


FIGURE 3:NUCLEAR FACILITIES








-  Full-scope DOE 5480.23 SAR or BIO, and DOE 5480.22 TSRs
-  Reduced-scope DOE 5480.23 SAR or BIO, and TSRs (inventory control)
-  Auditable Safety Analysis including OSHA/EPA requirements
-  Auditable Safety Analysis
-  Administrative Limits (see Procedure 1.03)

Table 4, Hazard Baseline Documentation Review

Active	Inactive	Inactive Portion of An Active Facility
Nuclear		
<ul style="list-style-type: none"> 1) Define All Facilities 2) Define the Facility Processes 3) Define the Facility's Authorization Basis (AB) Documents <ul style="list-style-type: none"> a) Describe the Applicable Hazard Analysis Process b) Describe the Applicable Safety Controls c) Describe the Applicable Process Hazards Review (PHR) Process 4) Describe the Unreviewed Safety Question (USQ) Process 5) Describe the AB update process 	<ul style="list-style-type: none"> 1) Define All Facilities 2) Define the Facility Processes 3) Define the Facility's AB Documents <ul style="list-style-type: none"> a) Describe the Applicable Hazard Analysis Process b) Describe the Applicable Safety Controls c) Describe the Applicable PHR Process 4) Describe the USQ Process 5) Describe the MOC Process that applies to the Facility 6) Describe the AB update process 	<ul style="list-style-type: none"> 1) Define All Facilities 2) Define the Facility Processes 3) Define the Facility's AB Documents <ul style="list-style-type: none"> a) Describe the Applicable Hazard Analysis Process b) Describe the Applicable Safety Controls c) Describe the Applicable PHR Process 4) Describe the USQ Process 5) Describe the MOC Process that applies to the this portion of the Facility 6) Describe the AB update process

Active	Inactive	Inactive Portion of An Active Facility
Radiological, Non-Nuclear & Industrial		
<ul style="list-style-type: none"> 1) Define All Facilities 2) Define the Facility Processes 3) Define the Facility's Hazard Baseline Documentation <ul style="list-style-type: none"> a) Describe the Applicable Hazard Analysis Process b) Describe the Applicable Safety Controls c) Describe the Applicable PHR Process 4) Describe the MOC Process that applies to the Facility 5) Describe the AB update process 	<ul style="list-style-type: none"> 1) Define All Facilities 2) Define the Facility Processes 3) Define the Facility's Hazard Baseline Documentation <ul style="list-style-type: none"> a) Describe the Applicable Hazard Analysis Process b) Describe the Applicable Safety Controls c) Describe the Applicable PHR Process 4) Describe the MOC Process that applies to the Facility 5) Describe the AB update process 	<ul style="list-style-type: none"> 1) Define All Facilities 2) Define the Facility Processes 3) Define the Facility's Hazard Baseline Documentation <ul style="list-style-type: none"> a) Describe the Applicable Hazard Analysis Process b) Describe the Applicable Safety Controls c) Describe the Applicable PHR Process 4) Describe the MOC Process that applies to the this portion of the Facility 5) Describe the AB update process